

# SYLLABUS

## Database Management Systems

CCWD211

# Database Management Systems

## Course Syllabus

### GENERAL COURSE INFORMATION

**Course Number:** CCWD 211  
**Credit Hours:** 3  
**Prerequisites:** None  
**Course Description:** This course covers principles of database systems, architecture of database management systems, relational model conceptual design and requirement analysis, database design and normalization, query languages, multi-user and distributed database issues; practical use of a DBMS and building of a database application.

### FACULTY INFORMATION

**Name/Title:**  
**Office Phone:**  
**Email address:**

### TEXTBOOK(S)

Text Title	Text Author	Text Publisher
Modern Database Management, 11th Edition 978-0132662253	Hoffner, Venkataraman, and Topi	Prentice Hall

### REFERENCES/BIBLIOGRAPHIES

Author(s)	Title	Publisher, Copyright Date	ISBN Number
Michael J. Hernandez	Database Design for Mere Mortals: A Hands-On Guide to Relational Database Design (3rd Edition)	Addison-Wesley Professional; 3 edition (February 24, 2013)	ISBN-10: 0321884493 ISBN-13: 978-0321884497
Fidel A Captain	Six-Step Relational Database Design(TM): A non-theoretical approach to relational database design and development	CreateSpace Independent Publishing Platform (April 20, 2012)	ISBN-10: 1475039212 ISBN-13: 978-1475039214
Lawrence Corr, Jim Stagnitto	Agile Data Warehouse Design: Collaborative Dimensional Modeling, from Whiteboard to Star Schema	DecisionOne Press (November 24, 2011)	ISBN-10: 0956817203 ISBN-13: 978-0956817204
	<a href="#">Database Journal</a>	Copyright 2013 QuinStreet Inc.	
	<a href="#">Information Week</a>	Copyright © 2013 UBM Tech	

### OTHER MATERIALS/RESOURCES

Microsoft Access 2013 or SQL Server  
Flash drive on which to store databases

### ASSESSMENT METHODS AND EVALUATION

Assessment:	Weight:
5 Homework Assignments	34%
Database Project	21%
Final Exam	45%
<b>Total</b>	<b>100%</b>

### **GRADING SCALE**(Grading Scale is at the discretion of the faculty)

A =	90%	-	100%
B =	80%	-	89%
C =	70%	-	79%
D =	60%	-	69%
F =	Below		60%

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<b>TOTAL</b>	<b>100%</b>
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### **PURPOSE OF ASSESSMENTS**

1. 5 Homework Assignments – Require the student to assimilate and reflect on the material learned in class and the readings by answering critical thinking questions.
2. Database Project – Require the students to work in groups to put theory into practice by implementing a real-life database to support a business.
3. Final Exam – Summative course assessment to test understanding of material.**DESCRIPTION OF ASSIGNMENTS**

**Assignment 1 (9%: 9 parts x 1%) Objective: Study basic database concepts to create a context for the rest of the course.**

Complete Exercises 1.1 – 1.9

**Assignment 2 (7%: 7 parts x 1%) Objective: Analyze and develop data models for different organizations.**

Complete Exercises 2.1, 2.2, 2.7, 2.9  
Complete Exercises 3.1, 3.2, 3.4

**Assignment 3 (6%: 6 parts x 1%) Objective: Analyze and implement logical and physical database designs.**

Complete Exercises 4.1, 4.5, 4.6  
Complete Exercises 5.1, 5.2, 5.3

**Assignment 4 (12%: 12 parts x 1%) Objective: Implement SQL queries.**

Complete Exercises 6.1, 6.2, 6.3  
Complete Exercises 7.1, 7.2, 7.3  
Complete Exercises 8.1, 8.2, 8.3  
Complete Exercises 9.1, 9.2, 9.3

**Assignment 5 (6%: 6 parts x 1%) Objective: Study and analyze database management techniques.**

Complete Exercises 10.1, 10.2, 10.3  
Complete Exercises 11.1, 11.2, 11.3

**Database Project (21%: 4 parts x 5.25%) Objective: Put concepts learned in exercises into practice using a database management system such as Access or SQL Server.**

Students should be placed into groups of 2-4 students. Each group will select a project for the instructor's approval. Possible project databases could include, but should not be limited to:

- JobSeeker: employers, positions available, job seekers, etc.
- Environmental Lab: chemicals, samples, experiments, clients, etc.
- Target Warehouse: stores, warehouses, orders, inventory, etc.
- Credit Tracking and Reporting Agency
- Zoo database: animal, exhibit, health of animals
- Airport database: airlines, runways, gates, terminals

Part 1: Database analysis. Describe the need for a database to support the work of the chosen industry/organization. Give a detailed analysis of how a database can be used to support the business.

Part 2: Database design. Give a detailed design for the proposed database using the tools from Chapters 2-5.

Part 3: Database implementation. Implement the database as designed in Part 2 and populate it with an appropriate number of tables and records.

Part 4: Database management. Create queries, forms and reports to appropriately demonstrate the usefulness of the database.

#### **MAJOR TOPICS/ CONCEPTS/ SKILLS/ ISSUES**

<b>Week No.</b>	<b>Topic Covered</b>	<b>Reading</b>	<b>Assignments Due</b>	<b>Contact Hours</b>
1-2	Databases in a business environment	Chapter 1: The Database Environment and Development Process	Assignment 1 in week 2	6
3-4	Data modeling	Chapter 2: Modeling Data in the Organization Chapter 3: The Enhanced E-R Model	Assignment 2 and Project -Part 1 In week 4	6
5-6	Normalization concepts and logical data structures Physical database design	Chapter 4: Logical Database Design and the Relational Model Chapter 5: Physical Database Design and Performance	Assignment 3 and Project -Part 2 In week 6	6
7-12	Database query processing using SQL	Chapter 6: Introduction to SQL Chapter 7: Advanced SQL Chapter 8: Database Application Development Chapter 9: Data Warehousing	Assignment 4 and Project- Part 3 in week 12	18
13-15	Multi-user and administration issues such as security, backup and recovery, and concurrency	Chapter 10 Data Quality and Integration Chapter 11: Data and Database Administration	Assignment 5 and Project- Part 4 in week 15	9
16-17	Final Exam			

#### **MAJOR LEARNING OUTCOMES WITH EVIDENCE, CORE COMPETENCIES AND INDICATORS**

<b>Students will be able to understand the role of databases and the influence of data on business decisions.</b>	
<b>Corresponding Evidence of Learning</b>	
<ul style="list-style-type: none"> <li>• Student will be able to list the advantages and disadvantages of using databases</li> <li>• Student will be able to explain how businesses use databases as a corporate resource</li> <li>• Student will be able to describe the functions of a database</li> </ul>	
<b>Core Competency: Think</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Employ the facts, formulas, procedures of the discipline</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Locally developed exam/objective</li> <li>• Performance or Demonstration</li> </ul>
<b>Students will be able to understand the components of a database system.</b>	
<b>Corresponding Evidence of Learning</b>	
<ul style="list-style-type: none"> <li>• Student will be able to define the components of a Database System</li> <li>• Student will be able to list the components of a Database Management System and describe the function of each component.</li> <li>• Student will be able to define the relationship between database development and application development</li> <li>• Student will be able to describe the database development process</li> </ul>	
<b>Core Competency: Think</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Employ the facts, formulas, procedures of the discipline</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Locally developed exam/objective</li> </ul>
<b>Students will be able to identify data requirements in a business situation and create a data model to reflect the data requirements.</b>	
<b>Corresponding Evidence of Learning</b>	
<ul style="list-style-type: none"> <li>• Student will be able to explain the importance of data modeling as an analysis and communication tool</li> <li>• Student will be able to describe the elements of a data model</li> <li>• Student will be able to model the data requirements for sample business problems using an industry recognized model diagram</li> <li>• Student will be able to identify business rules and understand the importance of documenting these rules in a database design</li> <li>• Student will be able to identify and represent constraints in database design</li> </ul>	
<b>Core Competency: Think</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Analyze data, ideas, patterns, principles, perspectives</li> <li>• Draw well-supported conclusions</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Locally developed exam/objective</li> <li>• Performance or Demonstration</li> <li>• Project</li> </ul>
<b>Core Competency: Communicate</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Employ methods of communication appropriate to your audience and purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Locally developed exam/objective</li> <li>• Project</li> </ul>
<b>Core Competency: Act</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Implement effective problem-solving, decision-making, and goal-setting strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Knowledge recall quiz</li> <li>• Problem-solving quiz</li> <li>• Project</li> </ul>
<b>Students will be able to convert a data model into DBMS-independent logical data structures and convert these data structures into appropriate Normal Forms.</b>	
<b>Corresponding Evidence of Learning</b>	

<ul style="list-style-type: none"> <li>• Student will be able to transform data models into a logical design that can be implemented in a relational database</li> <li>• Student will be able to describe foreign keys and referential integrity constraints</li> <li>• Student will be able to define the requirements for a table to be considered a relation</li> <li>• Student will be able to define the relationship between functional dependencies and problems that develop when the database is implemented</li> <li>• Student will be able to describe the role of Normalization</li> <li>• Student will be able to define the basic Normal forms through 3rd Normal Form</li> <li>• Student will be able to determine the Normal Form of a relation and execute the steps to put the relation into 3rd Normal Form</li> </ul>	
<b>Core Competency: Think</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Analyze data, ideas, patterns, principles, perspectives</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Performance or Demonstration</li> </ul>
<b>Core Competency: Communicate</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Employ methods of communication appropriate to your audience and purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Locally developed exam/objective</li> <li>• Project</li> </ul>
<b>Core Competency: Act</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Implement effective problem-solving, decision-making, and goal-setting strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Knowledge recall quiz</li> <li>• Performance or Demonstration</li> <li>• Problem-solving quiz</li> <li>• Project</li> </ul>
<b>Students will be able to implement a database from a logical design.</b>	
<b>Corresponding Evidence of Learning</b>	
<ul style="list-style-type: none"> <li>• Student will be able to use current Database Management software to create a relational database</li> <li>• Student will be able to demonstrate proficiency in using a relational database</li> <li>• Student will be able to use Structured Query Language (SQL) to retrieve data from a database</li> <li>• Student will be able to describe the advantages and disadvantages of indexes</li> </ul>	
<b>Core Competency: Think</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Employ the facts, formulas, procedures of the discipline</li> </ul>	<ul style="list-style-type: none"> <li>• Project</li> <li>• Homework</li> </ul>
<b>Core Competency: Communicate</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Employ methods of communication appropriate to your audience and purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Locally developed exam/objective</li> <li>• Project</li> </ul>
<b>Core Competency: Act</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Implement effective problem-solving, decision-making, and goal-setting strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Locally developed exam/objective</li> <li>• Project</li> </ul>
<b>Students will be able to describe the issues relating to managing multi-user databases.</b>	
<b>Corresponding Evidence of Learning</b>	
<ul style="list-style-type: none"> <li>• Student will be able to define and discuss issues relating to concurrency control</li> <li>• Student will be able to define and discuss issues relating to database security</li> <li>• Student will be able to define and discuss issues relating to database reliability including backup and recovery</li> <li>• Student will be able to define and discuss issues relating to database administration</li> </ul>	
<b>Core Competency: Think</b>	
<b>Indicators</b>	<b>Assessments</b>
<ul style="list-style-type: none"> <li>• Employ the facts, formulas, procedures of the discipline</li> </ul>	<ul style="list-style-type: none"> <li>• Knowledge recall quiz</li> <li>• Locally developed exam/objective</li> </ul>
<b>Students will be able to understand the issues relating to databases in a corporate environment.</b>	

<b>Corresponding Evidence of Learning</b>	
<ul style="list-style-type: none"> <li>• Student will be able to list and describe the major enterprise database processing architectures including Internet architecture</li> <li>• Student will be able to discuss the concepts of data administration in a corporate environment</li> </ul>	
<b>Core Competency: Think</b>	
Indicators	Assessments
<ul style="list-style-type: none"> <li>• Draw well-supported conclusions</li> </ul>	<ul style="list-style-type: none"> <li>• Classroom assessment technique</li> <li>• Knowledge recall quiz</li> <li>• Locally developed exam/objective</li> </ul>

**Special Note:** This syllabus was developed by [Valencia College](#), Orlando, Florida, United States of America.